IN THE CLAIMS

Please amend the claims as follows:

1. (currently amended) A process for preparing ~~an~~ a treated immobilized enzyme, which comprises the steps of:

i) immobilizing an enzyme used for decomposing oil and fat on a carrier by adsorption,

ii) without drying, bringing the immobilized enzyme into contact with 800 to 5,000% by weight based on the weight of said carrier, a fatty acid triglyceride, a fatty acid partial glyceride or mixtures thereof, ~~and~~

~~adjusting~~ wherein the moisture content of the enzyme ~~to~~ after contacting with said fatty acid triglyceride, said fatty acid partial glyceride or said mixture is 5% to 50% by weight based on the weight of the carrier~~, wherein the enzyme is used for esterification~~.

Claim 2 (canceled)

3. (currently amended) A process for preparing ~~an~~ a treated immobilized enzyme ~~for esterification~~, which comprises the steps of:

i) immobilizing an enzyme used for decomposing oil ~~&~~ and fat on a carrier by adsorption,

ii) without directly drying, by bringing the immobilized enzyme into contact with a fatty acid, fatty acid triglyceride, fatty acid partial glyceride, or mixtures thereof[[,]] in an amount of 20% to 3000% by weight, based on the weight of the carrier, and

iii) ~~thereby~~ dehydrating the immobilized enzyme, wherein the moisture content of the immobilized enzyme is 1% to 50% by weight based on the weight of the carrier~~, wherein the enzyme is used for esterification~~.

4. (original) The process for preparing an immobilized enzyme as defined in Claim 3, wherein the fatty acid, fatty acid triglyceride or fatty acid partial glyceride which is brought into contact with the immobilized enzyme is an oil phase substrate of the enzyme.

5. (original) The process for preparing an immobilized enzyme as defined in Claim 1, wherein the fatty acid triglyceride or fatty acid partial glyceride which is brought into contact with the immobilized enzyme is an oil phase substrate of the enzyme.

6. (canceled)

7. (new) The process of claim 3, wherein dehydrating is by at least one method selected from the group consisting of using molecular sieves and treating under reduced pressure.

SUPPORT FOR THE AMENDMENT

Support for the amendment to claim 1 is found beginning on page 10, line 17 through page 11, line 6 of the specification. Support for the amendment to claim 3 is found on page 12, lines 1-17 of the specification. Support for claim 7 is found on page 12, lines 11-14 of the specification. No new matter would be added to this application by entry of this amendment.

Upon entry of this amendment, claims 1, 3-5 and 7 will now be active in this application.

REQUEST FOR RECONSIDERATION

The present invention is directed to a process for preparing a treated immobilized enzyme.

Applicants wish to thank Examiners Fernandez and Prats for the helpful and courteous discussion held with their U.S. representative on April 14, 2005. At that time, Applicants' U.S. representative argued that claim 3 was distinguished from the prior art based on an active dehydrating step and as to claim 1 that Applicants would provide evidence of the lack of inherency from the reference U.S. 6,716,610. The following is intended to expand upon the discussion with the Examiners.

The use of immobilized enzymes for the decomposition of oils and fats has become of increased interest based on the discovery that partial glyceride compositions may provide advantageous health effects. Dried immobilized enzymes have been used however can suffer from a loss of activity. Improved methods based on contacting an immobilized enzyme with a reaction substrate, without drying in order to carry out an esterification reaction have been reported. Such methods have been described as providing high activity of the enzyme on and after the second reaction (page 2, lines 12-16 of applicants' specification). However,

methods of preparing a treated immobilized enzyme of high activity can still be improved upon.

The present invention addresses this problem by providing a method for preparing a treated immobilized enzyme in which A) an immobilized enzyme is brought into contact, without drying, with 800-5,000% by weight of a fatty acid triglyceride, partial glyceride or mixtures thereof to provide a moisture content of from 5-50% by weight (claims 1 and 5); or B) contacting an immobilized enzyme, without directly drying, with a fatty acid, fatty acid triglyceride, fatty acid partial glyceride or mixtures thereof, followed by dehydration to a moisture content of 1-50% by weight based on the weight of the carrier (claims 3, 4 and 7). Applicants have discovered that both methods provide for an immobilized enzyme of high activity. Such methods are nowhere disclosed or suggested in the cited prior art of record.

Claims 3, 4 and 7:

This embodiment of the present invention is directed to a method in which the immobilized enzyme in contact with a fat or oil is subject to a separate dehydration step.

The rejection of claims 1-6 as anticipated by Shimizu et al. EP1,008,647, U.S. 6,716,610 and U.S. 2003/0096383 are respectfully traversed.

Applicants note that all three cited references share common identification of inventors as well as priority claims to Japanese 10-346822 and 10-350920 and the disclosures therein are considered to be equivalent. For ease of communication Applicants will refer solely to the text of U.S. 6,716,610 in addressing this rejection.

Shimizu et al. fails to disclose or suggest a process in which an immobilized enzyme in contact with an oil and/or fat is subject to dehydration.

Shimizu et al. fails to disclose or suggest a separate dehydration step of the immobilized enzyme. The specification describes merely, without drying, treating the

immobilized enzyme with fats and/oils (column 2, lines 17-23). The reference describes in detail at column 4, beginning at line 47 that the substrate is contacted with the immobilized enzyme after immobilization by filtering the enzyme solution after immobilization, and when excess water content is removed, without drying the immobilized enzyme is brought into contact with fats and/or oils as the substrate. After this contacting, the immobilized enzyme is filtered and is therefore good in storage stability (column 5, lines 1-2). As such, the reference nowhere discloses or suggests a separate dehydration step.

In contrast, the invention of claims 3, 4 and 7 is directed to a process in which after the immobilized enzyme is brought into contact with a fat and/or oil, the immobilized enzyme is dehydrated to produce a moisture content of from 1-50% by weight based on the weight of the carrier. As the prior art fails to disclose or suggest a separate dehydration step, the claimed invention is clearly neither anticipated nor made obvious from this reference and accordingly withdrawal of the rejection under 35 U.S.C. §102(b) and 35 U.S.C. §102(e) are respectfully requested.

The secondary references of Shimizu et al. U.S. 6,258,575 and Ruthven have merely been cited to calculate a weight ratio of fatty acid triglyceride based on the carrier weight. However, the references fail to disclose a separate dehydration step and therefore does not render obvious the claimed invention.

As none of the cited references disclose or suggest a method in which the immobilized enzyme is separately subjected to dehydration, the claimed invention is clearly neither anticipated nor made obvious from this reference and withdrawal of the rejections under this section of the statute is respectfully requested.

Claims 1 and 5:

This embodiment of the present invention is directed to a method in which an immobilized enzyme is, without drying, brought into contact with 800-5,000% by weight

based on the weight of carrier of a fatty acid triglyceride, a fatty acid partial glyceride or mixtures thereof to provide a final moisture content of from 5-50% by weight.

None of the Shimizu et al. references disclose or suggest bringing into contact an immobilized enzyme with 800-5,000% by weight based on the carrier of a fatty acid triglyceride, a fatty acid partial glyceride or mixture thereof to provide a final moisture content of 5-50% by weight. The reference fails to specifically suggest any amount of oil phase to contact with the immobilized enzyme.

According to Example 1 of Shimizu et al. '610 an immobilized enzyme on 10 grams of carrier is treated with 40 grams of soybean oil. The ratio of the amount of fat/oil based on the carrier is 400%, well below the claimed 800 wt. % minimum.

In contrast claim 1 has been amended to recite a process in which the immobilized enzyme is brought into contact with 800-5,000 wt. % of oil phase, based on the weight of carrier. Applicants note that the claims have been amended to recite an amount of oil of 800-5,000 wt. % based on the carrier.

Applicants respectfully submit that treatment by using 400% by weight of oil based on the weight of carrier that an immobilized enzyme having a moisture content within the claimed range of 5-50% is not obtained. As evidence of the lack of inherency of Example 1 of Shimizu et al. '610, Applicants enclose herewith the Declaration of Mr. Manabu Sato, a named inventor of the above-identified application. The Sato Declaration prepares an immobilized enzyme, and without drying treats the enzyme with various weight percentages of oil. 400 wt. % was used as exemplary of Example 1 of Shimizu et al. '610. 800 and 1,00 w.t % was used as examples according to the present invention. For the Examiner's convenience, the table from the Sato declaration is reproduced below.

	Example	Oil amount for contacting with the immobilized enzyme (wt.% based on weight of the carrier)	The amount of oil in the immobilized enzyme after filtration (wt.% based on weight of the carrier)	Moisture content	
				* (wt% based on the weight of the carrier)	** (wt% based on the weight of the immobilized enzyme)
US 6,716,610	Example 1	400	150	66	21
Claimed Invention	Newly measured data	500	150	52	17
		800	150	42	14
	Example 1	1000	150	29	11

As is apparent at a treatment ratio of 400% as used in Example 1 of Shimizu et al. '610, the residual moisture content of the carrier remains high at 66%. In contrast, when treated with amounts of 800 and 1,000 wt.%, the residual moisture content was much lower at 42 and 29 wt.%, respectively. Accordingly, by treatment with an amount of 800-5,000 wt.% of oil, a residual moisture content of 5-50% by weight may be achieved. As the reference fails to disclose or suggest such an amount of oil and Applicants demonstrate that the amount of oil in the reference fails to anticipate the claimed method, the present invention is believed to be neither anticipated nor made obvious from this obvious as there is no suggestion in the reference to use such an amount of oil in the treatment of an immobilized enzyme and at such a treatment rate, residual moisture contents within the claimed range of 5-50% by weight are possible. Accordingly withdrawal of the rejections under 35 U.S.C. §102(b), (e) and 35 U.S.C. §103(a) are respectfully requested.

The rejection of claims 1-6 under 35 U.S.C. §112, second paragraph have been obviated by appropriate amendment.

Applicants have now rewritten claims 1 and 3 to more clearly recite specific process steps and to make clear that a treated immobilized enzyme is being prepared. Furthermore, the requirement for the use of the enzyme for esterification has been dropped.

As to claim 1, the moisture content being within the range of 5-50% by weight based on carrier, is a result of contacting the immobilized enzyme with 800-5,000% by weight of the oil composition. As to claim 3, a separate dehydration step is provided to reproduce a moisture content of from 1-50% by weight. As such, the metes and bounds of each of claims 1 and 3 are clear to those of ordinary skill in the art and accordingly withdrawal of the rejections under 35 U.S.C. §112, second paragraph are respectfully requested.

Applicants submit this application is now in condition for allowance and early notification of such action is earnestly solicited.

Respectfully submitted,

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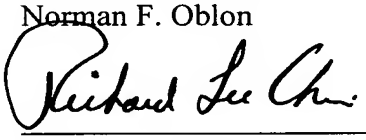

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